AVIATION

SEPTEMBER 18, 1922 Issued Weekly PRICE 10 CENTS

Sailplaning: E. T. Allen on the M.I.T. Sailplane in France

VOLUME XIII
Number 12

SPECIAL FEATURES

NAVY ENTRIES IN THE DETROIT AIRPLANE RACES
HOW TO LAY OUT A PRACTICAL AIR ROUTE
"WHO'S WHO IN AMERICAN AERONAUTICS"
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HIGHLAND, N. Y.
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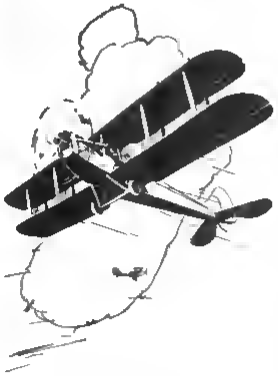

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BORDEN & REVIEW AVENUES,

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Reprinted from *N. Y. American* - Sunday August 27th, 1922

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Three Hundred Hour Test At High Speed Without Making Stop

Power developed sufficient to carry airplane with full flying load around the world, or one-eighth of the way to the moon—Marvelous engine gets unprecedented test and surpasses all requirements

By JOSEPH MULVANEY

America, which gave to the world the first practical airplane, has now added immeasurably to that achievement by developing the greatest airplane engine in history.

This is the story of that engine—an engine that flew around the globe without a stop, to phrase it figuratively; an engine that exceeded every record on earth for energy, efficiency and endurance, an engine which in performance surpassed every superlative of fact or fiction. This is the story of the AEROMARINE U-873 told for the first time.

Viewed as it rested on the testing block in the plant of the Aeromarine Plane and Motor Company at Keyport, N. J., there was nothing revolutionary in the appearance of the engine, but that is one of the strongest points about that motor. It isn't a freak, constructed on weird theories for service under impossible conditions.

Rear Admiral W. A. Moffett, chief of the bureau of aeronautics, conferred with the Aeromarine officials as to the possibility of subjecting the engine to a 100-hour test. The latter, knowing the engine, proposed a 200-hour test, and it was finally decided, in order to be sure to reach what they believed would be the "breakdown stage," to set 300 hours as the ultimate limit beyond which human ingenuity could not possibly carry the endurance of such a highly-stressed mechanism.

At the successful conclusion of the test the navy inspectors marveled when they stopped her, almost reluctantly, at many things. The vibration, or rather the lack of vibration, had been amazing. The angle of the cylinders accounted for that. The bearings were not burned. No, because they were overaze bearings. The oil had not clogged. No, because there was an oil separating system, operated by centrifugal force, that freed the carbon from the lubricant. Overheating? None! Valves ground? Na, sir. Water-jacket cracked or leaking? Absolutely tight and sound. What is wrong, then? Nothing! !

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Now this was a superlative performance, an achievement unprecedented, but the Aeromarine officials knew that engine better than many who watched ever guessed. Because before the Navy officials and inspectors had set eyes on her they had watched U-873 run for 200 hours without a halt, and they knew what the mighty machine could do.

And the commanders and inspectors who on eight-hour shifts had watched the miracle of power and endurance and efficiency did not regret the time spent in the watching. They brought back to Washington the report of the greatest motor in the world—they were the heralds of the revolution in aviation, and they were repaid manifold.

The entire Aeromarine engineering staff have been inundated with congratulations from engineering experts from all over the world on their success in enabling America to again record the most important aeronautical development since the Wrights developed the airplane.

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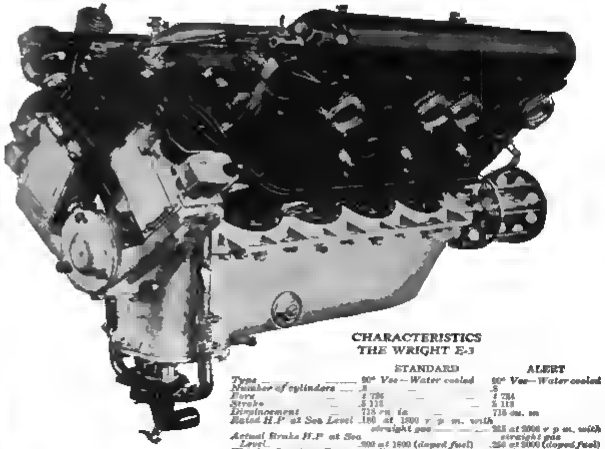

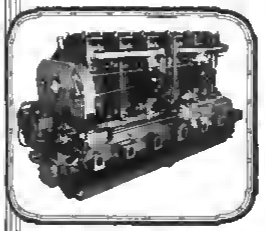

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	STANDARD	ALERT
Type	90° Vee—Water cooled	90° Vee—Water cooled
Number of cylinders	8	8
Bore	4 7/16	4 7/16
Stroke	5 1/2	5 1/2
Displacement	728 cu. in.	728 cu. in.
Rated H.P. at Sea Level	180 at 1800 r. p. m. with straight gas	215 at 2000 r. p. m. with straight gas
Actual Brake H.P. at Sea Level	200 at 1800 (dopes fuel)	250 at 2000 (dopes fuel)
Weight of engine—Dry	480 lbs.	485 lbs.
Lbs. per actual B.H.P.	2.4	1.88
Length Overall	42 1-16 in.	39 1-8 in.
Width Overall	39 7-16 in.	39 7-16 in.
Height (Engine bearer to top)	18 3-4 in.	18 3-4 in.
Fuel Consumption (lbs per H.P. Hr.)	.65	.69
Oil Consumption (lbs per H.P. Hr.)	.035	.015

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No other aeronautical engine built has had such an experience or such a production behind it. Over 50,000 of these models were produced for the war emergency and used by all the Allied Governments—proof positive of their efficiency.

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WRIGHT

AERONAUTICAL CORPORATION

PATERSON, NEW JERSEY, U. S. A.

SEPTEMBER 18, 1922

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CONTENTS

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The Significance of Sailplane Experiments

As was to be expected, the remarkable soaring flights accomplished recently by several German experimenters have elicited much over-optimistic comment in quarters where the various phases of aeronautics are but incompletely understood. Many writers, with apparent logic, came to the conclusion, after one, two and three hour soaring flights were shown to be feasible, that these experiments portended nothing less than the advent of a new era of "cheap flight" with the assistance of the winds.

An objective appreciation of the sailplane experiments which have been responsible for these anticipations does not—in any case at present—warrant such hopes as the crossing of the Atlantic or of the Sahara desert by the miraculous agency of the "internal force of the wind." It seems, therefore, fitting that we dispassionately draw the real lessons of these experiments.

To begin with, it should be clearly understood that the "quality" of soaring depends to a much greater extent upon the prevailing atmospheric conditions—which again depend upon the ground formation—than upon the type of construction of the sailplane. This explains why *all* the German soaring flights of any importance have occurred *in one region only*, namely the Rhon hill district, which is notable for its entire configuration as well as for the high velocity and irregularity of the prevailing winds. No doubt, to obtain soaring flight, a sailplane has to embody certain characteristics which differentiate it from airplanes; chief among these is a much lighter wing loading. However, apart from this feature, almost any well designed airplane could be soared under certain wind conditions, as may be seen from the fact that at the French meet some of the best performances were made by a sport airplane in which the engine had been removed and the pilot located in its place.

Second, it cannot sufficiently be emphasized that the great insistence upon the remarkable *duration* of the German soaring flights is apt to make us forget that the *distance* covered in these performances was quite negligible, and this for the very good reason that the sailplanes merely described circles and figure eights over the region in which the air was "soarable." Had they emerged from this region, their flights would have been promptly cut short.

This consideration should suffice to explode visions of the future where sailplanes fitted with an auxiliary engine are supposed to carry a large commercial load by "sailing the air" when the wind is blowing, and turning on the power in a dead calm. The picture looks pretty, but it is merely an idle dream.

Having disposed of such fanciful dreams, we are better able to appreciate the true significance of the recent soaring experiments. Their real value primarily lies in that they will enable us literally to chart the aerial ocean and so obtain a better understanding of the medium in which aircraft navigate. Aeronautical maps will, as a consequence, bear indications of the prevailing wind conditions a pilot may expect in a given region—a very useful information now totally lacking. Second, sailplanes will afford an inexpensive way for testing in flight new aerodynamic combinations. This will usefully supplement data obtained in wind tunnels which, as is known, are not always accurate, owing to the scale effect. Third, we believe, that eventually proficiency in sailplaning will be required from every pilot as a master certificate of flight. Contrary to general belief, soaring demands the highest qualities from the pilot, which is demonstrated by that the best performances have so far been achieved by experienced fliers only. Finally—and this, we realize, is most open to dissent—soaring experiments *may* lead to the creation of cheap low-powered airplanes of modest performance which would be both sailplanes and power fliers. Such aircraft, to our way of thinking, would form an amusing form of diversion—just as sailplaning may develop into a real sport—but it is to be doubted whether they would possess much practical value.

Preparing for the Night Air Mail

In an address delivered before the last Aeronautic Executives' Luncheon, Col. Paul Henderson, Second Assistant Postmaster General, in charge of the Air Mail Service, expressed the opinion that the true commercial possibilities of the airplane will not be demonstrated until night flying is established. He illustrated this by pointing out that for actual time saving airplanes today would have to travel two or three times as fast as the transcontinental trains, as the latter run day and night, whereas the airplane flies in daytime only so that its "business speed" over a period of 24 hours is only 50 per cent of its actual performance.

This is a view we have often expressed in these columns and it is therefore gratifying to see it confirmed by a transportation authority like Colonel Henderson.

At the present time no mail is entirely carried by airplane from coast to coast; mail delivery is merely accelerated by a combined air and rail service. However, the Air Mail Service is now engaged in equipping the Chicago-Cheyenne section of the transcontinental airway for night flying, and Colonel Henderson is confident that once this service is operating it will be possible to deliver a letter in San Francisco 28 hours after it left New York. What such a rapid mail service would mean to the business world is easily visualized and hence dispenses us of comment.

The Air Mail Service, which already has earned the gratitude of the aeronautical profession by a splendid demonstration of safety and dependability—unequalled so far—is to be congratulated for undertaking the arduous work of establishing night flying, a pioneer enterprise worthy of its past record.

Navy Entries in the Detroit Airplane Races

Five Land Planes to Compete for Pulitzer Trophy – Ten Seaplanes Entered in Curtiss Trophy Race

All of the entrants in the National Airplane Races to be held at Detroit Oct. 7 and 12-14 have not yet submitted complete descriptions of their machines. In many instances the pilots who will drive the planes have not yet been named. The Naval Bureau of Aeronautics, however, herewith announces its planes and pilots in the various events, with interesting data concerning each.

Curtiss Marine Trophy Race

The Naval Bureau of Aeronautics has entered eleven seaplanes in the Curtiss Marine Trophy Race, which will be held over the waters of Lake St Clair, at Detroit, Saturday October 7. The prize is the beautiful silver trophy donated by Glenn H Curtiss. Money prizes of $1200 for first, $600 for second and $200 for third place accompany the trophy.

The Naval entries include

1. 1-Vought UO1 seaplane with Aeromarine 250 hp engine built by the Chance Vought Corp, at Long Island City, N. Y. It is 34 ft. 1¾ in. across the wings and weighs, loaded, 2608 lb. It has a speed of 130 m.p.h.

The pilot is Lieut. Comdr. M. A. Mitscher, of the Naval Air Station at Anacostia, Washington, D. C., who will head the naval delegation of pilots competing in the races. Lt. Comdr. Mitscher is a native of Hillsboro, Wis. He was appointed to the Naval Academy in 1906 and graduated in 1910. He served aboard the armored cruisers and also on destroyer squadrons until he entered naval aviation in 1915. He served at Pensacola until the war and then to the Huntington for catapult duty. He was navigator on the U. S. Naval Seaplane N.C.1, on the transatlantic flight in 1919. For two years later he was commander of the spotting squadrons with the Pacific fleet; and then was assigned to command of the U. S. Naval Air Station at Anacostia, D. C. Lt. Comdr. Mitscher is considered one of the leading naval pilots.

2. Curtiss H16 seaplane, with two high compression Liberty motors, 420 hp. each. The H16 was developed for patrol and convoy work. Its upper wings are 95 ft. 1 in. across. Loaded it weighs 10,900 lb., and has a speed of 100 m.p.h.

The pilot is Lieut. Rutledge Irvine, U.S.N., formerly of Brooklyn, N. Y. He was a student at Cornell University and enrolled in Naval Aviation in April 1917. He was one of the pilots who made the world's record endurance flight in an F5L seaplane at Hampton Roads in April, 1919, when they remained aloft 20 hr. 10 min. The record was broken last January at Garden City, L. I. N. Y., Lt. Irvine later served with the Pacific Fleet air squadrons, and was one of the pilots participating in the noted flight from San Diego, Cal. to Panama and return.

The Gear-driven Gallaudet

3. Gallaudet D4 seaplane, with one high compression Liberty motor, 420 hp. Built by the Gallaudet Aircraft Corp. at East Greenwich, R. I., for Naval patrol work. It is the only machine in the country using the gear drive. The motor is located in the fuselage. The propeller directly behind the wings on a gear ring through which the body and tail structure of the plane extends. Its speed averages 135 m.p.h.

The pilot is William Kenneth Patterson. He was a student at Cornell University when he entered the Naval service in April 1917. He became an aviator and was sent abroad in 1918, serving at Moutchic, France. He has had more than 800 hr. in the air.

4. Navy 18T seaplanes with Curtiss CD12 engine, 400 hp. Built by the Curtiss Aeroplane & Motor Corp., at Garden City, L. I., N. Y., originally as a high speed tractor triplane for overland use. For the Curtiss Marine Trophy race two of these planes have been fitted with pontoons. The triplane has made 162 m.p.h., a record for two seater machines.

The pilots of the two Navy 18T planes are Lieut. T. B. Lee, U. S. N. and Lieut. Lawson H. Sanderson, of the U. S. Marine Corps. Lt. Sanderson is a graduate of the University of Washington. He entered the Marine Corps in April 1917, and has seen considerable flying service in the tropics. He was one of the pilots in the Pulitzer Trophy Race in 1920.

5. Vought E7H, seaplane, with Wright 240 hp. engine. The Vought is a standard two-seater advanced training plane and now used as an observation plane. Many of the ships of the Atlantic and Pacific fleets are equipped with these types. The VE7H for these races has been fitted with a pontoon. The ship was built by the Chance Vought Corporation at Long Island City, N. Y.

The pilot is Lieut. H. A. Elliott, U. S. N. originally from Sidney, Ohio, but enrolled in Naval Aviation from Detroit, Mich., in April 1917. He was the first Detroiter to land in France with American forces. He served with the French Army and the British air forces, and flew Spads with the French squadrons over the lines. At the time of the armistice he was flying with the Italian S. V. A. squadrons at Venice. He is squadron commander of the Landplane squadron at Pensacola, Fla.

The Navy TS Types

6. Navy TS1, (seaplane) with Lawrence J-I radial air-cooled engine, 220 hp. Designed by Bureau of Aeronautics, Navy Department, built by Curtiss Aeroplane & Motor Corp. Wing span 25 ft., length 24 ft, 7 in. Speed 125 m.p.h. Weight 2,025 lb.

The pilot is Lieut. Stephen W. Callaway, U. S. N., formerly of Bismark, N. D. Attended State Agricultural and Mechanics Arts College at Bozeman, Mont. He built his own airplanes and flew them ten years ago; and enlisted in Naval Aviation the day after war was declared. He was instructor at the ground school for student officers at Minneapolis, served at various air stations throughout the United States and then went back to commercial flying in California in February 1919. A year ago he went back to Naval aviation becoming a spotter and test pilot with the Pacific Air Squadrons, reporting at Anacostia, Washington, D. C. for work preparatory to entering the Curtiss Marine Trophy Race.

7. Navy TS2, (seaplane) with Aeromarine U8D motor 240 hp. Built at the Naval Aircraft Factory, Philadelphia. Similar, with the exception of the engine, to the TS1. The TS2 has a speed of 130 m.p.h. Both these ships were designed to afford maximum facilities for take-down and erection aboard ship. The fuel tanks are located in the wing, so that in case of fire by incendiary bullets, the pilot can drop the tanks overboard by simply pulling a release. The planes also have interchangeable landing gears so that they may be used with water or land equipment.

The pilot is Lieut. Harold J. Brow, U.S.N., of 95 Peace street, Providence, R. I. He is a graduate of the Providence High School. He enlisted in Naval Aviation in April, 1917. After the war he continued to serve at various air stations in the United States, participating in the aerial bombing tests off the Virginia Capes in 1921, leading the squadron of Navy Martin bombers. He is now flight superintendent at the Naval Air Station Anacostia, Washington, D. C.

8. Navy TR1 seaplane with Lawrance radial air-cooled engine, 220 hp. Designed by the Bureau of Aeronautics, U. S. Navy and built at the Naval Aircraft Factory, Philadelphia. Wing span 25 ft., length 24 ft. 7 in. Wright, loadrd 1790 lb. Speed 130 m.p.h. The TR1 and TR3 were designed similar to the TS types except that they are equipped with special racing wings. With the TS types these planes are of the greatest technical interest to the Navy, which has welcomed the opportunity afforded by the Curtiss trophy contest to try out three different engines and two kinds of wings.

The pilot is Lieut. A. W. Gorton, U.S.N. He is a native of

The Curtiss-Navy Racer (400 hp. Curtiss D12 engine) on which Bert Acosta won last year's Pulitzer Race and which Lieut. Frank C. Flechteler, U.S.N., will pilot for the Navy in this year's race

The Thomas-Morse, Model MB7 (400 hp. Wright engine), which Capt. Francis P. Mulcahy, U.S.M.C., will pilot for the Navy in the forthcoming Pulitzer Trophy race

Pawtucket, R. I., and was attending Dartmouth College at Hanover, N H., until March, 1917, when he enlisted in the French Ambulance Corps. Saw active service on the front, and participated in the second battle of the Verdun. Was transferred from the French army in September, 1917, to Naval Aviation. He has had more than 1200 hr in the air

9 Navy TR3, seaplane, with Wright E3 engine, 220 hp Built by the Navy Aircraft Factory at Philadelphia. Weight, loaded, 1980 lb. Speed 130 m p h.

The pilot is Lieut David Rittenhouse, U S N., of St Paul, Minn He was in the University of Minnesota when he entered the Norton Harjes Ambulance Corps in France He was transferred to American Naval Aviation in Minneapolis in November, 1917, and has had more than 1400 hr in the air

10 Curtiss HA2, with Curtiss D12 engine 400 hp Built by the Curtiss Aeroplane & Motor Corp at Garden City, L. I., N Y Wing span 42 ft Length 30 ft. 9 in Weight, loaded, 3906 lb. Speed 135 m.p.h. The HA2 is a Curtiss designed and built seaplane, was originally brought out in 1918 to combat the high performance of German seaplanes which were interfering with bombing operations conducted against the submarine bases on the Belgian Coast

The pilot is Ens. Alford J Williams, Jr., U S N., of New York City He is a graduate of Fordham University, New York, and played two seasons with the New York "Gnants" He has had more than 1042 hr in the air.

Pulitzer Trophy Race

11 Curtiss-Navy Racer, with Curtiss D12 engine, 400 hp. Built by the Curtiss Aeroplane & Motor Corp at Garden City, Long Island, N Y. A similar type won the 1921 Pulitzer Trophy Race at Omaha, Neb. Wing span 22 ft 8 in Length 20 ft 9 in Weight loaded, 2095 lb Speed 186 (or more) m.p.h Has made 197 8 m.p.h in a straight flight. Ply-wood wings, fabric glued, and ironed

The pilot is Lieut Frank C Flechteler, U S N, of San Rafael, Cal He graduated from Annapolis Naval Academy in 1917, and became a navel aviator in 1920 He has been serving with the fleet planes aboard the airplane carrier U S S Langley

12 Navy "X" One of the Navy's mystery planes, engine not made public No specifications given Two planes entered

The pilots are Ens. Alford J Williams, Jr., (see No 10) and Lieutenant Irvine, (see No 2)

13. Booth Navy Racer (BR1), with Wright H3, 400 hp engine. Designed and built by Booth & Thurston of the Aerial Engineering Corp at Hammondsport, N. Y. Formerly with the Curtiss corporation, where they worked on the design of the CR planes. The BR1 has a retractable landing gear by means of which the entire landing gear is pulled up into the body or fuselage while the machine is in flight. Only an nabraced monoplane wing is used, no radiator is carried, a thin sheet of copper covering the entire wing and under this the water circulates so that the wing itself becomes a radiator performing the dual function of cooling the water and supporting the weight of the plane. These three distinct innovations make the BR1 racers, of which two are entered by the Navy, among the most interest ng contestants in the Pulitzer contest If they sustain the strain of a race it is believed that they will effect the future design of all military and naval aircraft. The pilots are Lieutenants Calloway and Rittenhouse (See Nos 7 and 10, respectively).

14. Thomas-Morse MB7, with Wright H3 engines, 400 hp Built by the Thomas-Morse Aircraft Corp, Ithaca, N Y. A monoplane 24 ft. across the wing, length 18 ft 6 in. Weight loaded, 2000 lb. Speed 180 m.p.h. or more

The pilot is Capt Francis P. Mulcahy, U S. Marine Corps He was graduated from Notre Dame University in 1014 and commissioned in the Marines in June 1917 He is a native of Rochester, N Y Served with distinction in active aerial combat on the Western Front Was officer in charge of flying at Marine Field, Quantico, Va., until assigned to prepare for Detroit races.

15 Curtiss TR (Wildcat) with Curtiss C12 engine. Won second place in 1921 Pulitzer race The pilot was announced.

The Pulitzer Trophy was donated by Ralph Pulitzer, proprietor of The New York World Money prizes of $1200 for first, $600 for second, $200 for third place accompany the trophy.

British Civil Aviation Report

The half yearly report on civil aviation in Great Britain, recently issued by the Air Ministry, indicates that progress has been fairly steady, and it is pointed out with much satisfaction that for the first time there has been no fatality during a half yearly period. A decrease is shown in the number of continental flights, 485 having been made during the six months from October, 1921, to March, 1922, as against 644 during the corresponding period of the preceding year An increase, however, is shown in passenger traffic, the number of passengers carried during this above mentioned period being 1656 as compared with 1418 during the same period in 1920-21 and 706 in 1919-20

Imports and exports by air did not maintain in the 1921-22 winter period the high level attained in 1920-21, possibly due to general trade depression.

That the British aviation concerns have had a major share in the total air traffic is also plain, since the arrivals and departures of machines of all nationalities flying on all cross-channel routes during these three half yearly periods were 2511, 2023 and 837, respectively

The report states that a considerable increase in traffic is essential if the air transport firms are to obtain a commercial basis of operation, but points out that the traffic figures for the first quarter of this year are, at least, encouraging During these three months, the total number of passengers carried by both British and foreign companies between London and the continent was 951, of which number 67fi traveled by British lines.

Between August, 1919, and March, 1922, the total value of imports by air amounted to £1,157,556 and of exports £605,759, a grand total of £1,763,315

Special attention is drawn in the report to the increase in efficiency of the British Continental air services during the winter months as compared with former years. During the three months (December, January and February) the average efficiency of the services was 79 4 per cent as compared with 66 2 per cent for the corresponding months in 1920-21. For the whole year 1920, the efficiency of operation was 80 2 per cent, and in only four months was this figure exceeded. For 1921, the figures rose to 89 2 per cent, and only in four months did the efficiency fall below 90 per cent The 90 per cent efficiency rate was not reached in any month in 1920

New Figure of Merit

For the purpose of obtaining a figure of merit in the comparison of the efficiency of airplanes, L. D Seymour, an aeronautical engineer of the Air Service, uses a simple system which is of general interest.

This figure of merit is governed by three factors How fast will a given machine carry a given load and at how great an expenditure of power. In other words, how fast (speed) and how great useful load per horsepower.

$$\text{The factor is} = \frac{\text{Useful load in lb}}{\text{Horsepower}} \times \text{speed in m.p h.}$$

Examples are given below

A carries 100 lb with 25 hp. at 50 m.p h.
B carries 200 lb with 25 hp at 50 m.p h.
C carries 50 lb with 12½ hp at 50 m.p h.
D carries 100 lb with 50 hp at 25 m p h.

$$\text{Factor A} = \frac{100}{25} \times 50 = 200$$

$$\text{Factor B} = \frac{200}{25} \times 50 = 400$$

$$\text{Factor C} = \frac{50}{12.5} \times 50 = 200$$

$$\text{Factor D} = \frac{100}{50} \times 25 = 50$$

The relative efficiencies are, thus, 200, 400, 500, 50, or as 4, 8, 4, 1

How to Lay Out a Practical Air Route

Practical Hints Based Upon Map of Air Route Between Washington, D. C., and Langley Field

By Lieut. V. S. Miner and T. Carroll, N.A.C.A.

The value to the nation of air routes as military assets is very well recognized, and their secondary value as commercial assets is beginning to be more clearly recognized in this country It is peculiarly unfortunate that the value of air routes is less generally appreciated in the United States than it is and has been for some time by the European nations. Also, unfortunately, the problem of laying out an air route has been constantly approached by all those who have given it consideration in this country in the apparent attitude that it is one of the hardest things in the world to do As a matter of fact, a very serviceable air route can be laid out with an absolute minimum of ground work.

It is recognized by every one in the flying world that an air route which will afford a secondary landing field at every 25 miles, an endless line of ground markers, supplemented at night by light-houses and the more ambitious program of wireless direction and meteorological information should be the perfect airway The pivotal requirements of an airway are First, as direct a point-to-point line as possible, obvious from the necessity of keeping the total mileage at a minimum. Secondly, avoidance of mountains, open water and marshes and desolate land where a forced landing would isolate the airplane and its passengers from immediate assistance. Thirdly, while the compass course is a perfectly feasible method of navigation, still it is of almost an absolute necessity that certain landmarks be checked from time to time to correct for drift Furthermore, it is of the utmost assistance to the pilot to know at any given point in his trip what his approximate mileage is and the approximate mileage to his destination This, of course, will be eventually made easy by the already suggested ground markers which will tell at a glance the absolute distance to the nearest terminal

However, in the accompanying map we have an airway which is probably one of the most constantly travelled in the United States which crosses what is apparently some of the least desirable flying terrain in the world, excepting of course routes through desolate mountain regions. Still with a minimum of ground preparation with the aid of this map it becomes a very practicable, easy and safe air route

In this map, which has been drawn by Lieut. V. S. Miner, of the U S Air Service, Langley Field, Va., a simple hydrographic map between Washington and Langley Field has been used as the basis. The direct route has been laid out as a straight line between these points. This, however, is not designated as the airway. It merely indicates the straight line. A supplementary line has been drawn following this direct line as closely as possible but following the better terrain and it is along this line that the better judgment of the pilot will tell him to fly. Along the margins on the right-hand side of the map in either direction is a scale showing the exact mileage along the route. Also at each terminal, the compass course is indicated, giving the destination and the magnetic course. Landmarks are indicated by arrows and the word "check," and in each case they are of such a nature that they can be seen from a considerable distance, varying according to the weather conditions, from the route itself, and it is expected that the pilot travelling the route will avail himself

Reproduction of the map of the air route between Washington, D C, and Langley Field, Va., drawn up by Lieut V. S Miner, A S.

of these check marks to ascertain his exact position Furthermore, while no attempt is made to cover every possible landing field, some of the best at distances not exceeding 20 miles apart are indicated and each of these have small supplementary inserts showing enlarged diagrams of that particular field. It is perfectly evident to even the most untrained eye what value this is in assuring a pilot that it is a field which has been examined by some flier and has been approved as a good landing field, and further that the exact places along these fields where it is best to make the actual landing are indicated. Another unique feature is that each of these fields is numbered and upon the reverse side of the map all the available information in regard to assistance in the way of transportation, gasoline and mechanical help is tabulated, which is of immense assistance to the pilot after he has landed at the field.

All of this information has been compiled from casual observation and reports from various members of the flying personnel of Langley Field who have had occasion to drive through this section and who have compared the fields with their observations made from the air; no little part of this has been done by Lieut. Miner himself

Unfortunately, this map has been drawn with particular reference to the southern end of this route and it is noticeable that the end of the route between the Potomac River and Washington is not as thoroughly covered as that to the south. This, of course, can be easily remedied, and the many unique features of this map make it particularly noteworthy It is believed that by placing this map in the hands of any pilot

of sufficient qualifications to pilot an airplane across country that a reasonably selected and perfected air route has been laid out with very nearly all of the required information for his guidance, and it is suggested that, using this map as a basis, more work of this nature be carried out. The amount of ground work necessary in preparing this map is negligible and its utility is best vouched for by the pilots who have flown over this route a great many times and who endorse the extreme utility of the map.

—*N A C A Report*

Parachuting from 24,000 Ft.

Some interesting details regarding a 24,000 ft. parachute jump made last June at McCook Field by Capt. A. W. Stevens, A. S., are given by this officer in his report to the Chief of Air Service. Captain Stevens jumped from a supercharged Martin Bomber piloted by Lieut. Leigh Wade, with Sgt. Roy Laughham as the other passenger. The report says in part:

"The pack-cord was ripped about 10 ft. below the fuselage of the bomber. The parachute opened instantly and was fully open in less than 100 ft. below the plane (estimated). The writer has made several jumps before, viz.: from 1500 ft., at 85 m.p.h.; 1500 ft. at 65 m.p.h., and 5600 ft. at 65 m.p.h. Although the plane speed is estimated by the pilot at 110 m.p.h., the shock of opening was less, if anything, than on the previous jumps by the writer at lower altitudes and speeds—due very likely to the lower density of atmosphere.

"The writer had complete confidence that the parchute would open fully—soonar or later. The only question with him was whether the passage of the silk fabric through the cold, rarefied upper air might generate enough static electricity to hold the folds of the 'chute tight together for a time, until when it did open the shock might result in rupture, either of the operator's body, or of the shroud lines. This fear was groundless, as the 'chute opened instantly—or practically so. The 'chute used had the vents sewed right; it had been tested with both 100 and 200 lb. weights in the usual manner over McCook Field from about 600 ft. altitude.

"The time of descent was not over 20 min., from the writer's estimate. It may have been less than 20 min., but was over 15 min. The writer would like to make another jump from a still higher altitude, 30,000 ft. or more, when he recovers from a few broken foot bones, and if this is done, a recording barograph will be carried as part of the jumper's equipment. Needless to say, a comparatively windless day is best to choose for a thing of this kind as the 'chute may get caught in a down current on a windy day and land twice as hard as usual. Also, the jumper from high altitudes is burdened with heavy flying clothing, which increases his weight considerably.

"Attention is called to the fact that the parachute averaged a ground speed of one and one-half miles a minute, based on a total travel of 30 miles and a time descent of less than 20 min. The ordinary time of descent is about 1000 ft. per minute at ordinary altitudes, for instance, in the 5600 ft. jump previously referred to, the time was 6 min. In the thin upper air the 'chute undoubtedly falls faster, especially when it is oscillating and spilling air, as was the case all the way down on the recent jump.

"Ten minutes of such oscillation will upset anything but a cast-iron stomach. In the writer's case, he was thoroughly seasick by the time half of the descent was over. He could get little relief by closing his eyes, and of his eyes were open the landscape below heaved and tipped in all directions. It is of interest to note that temporary relief was experienced by fixing the eyes for a few seconds on the center of the parachute, this being the only point in space reasonably at rest with respect to the body of the jumper.

"It is inadvisable to open the second 'chute for the purpose of checking oscillation, as one then loses control of movement. With a single 'chute it is possible to change the direction of one's flight very considerably, even on a windy day. On a calm day one can do much better even to the extent of picking out a particular field in which to land. On a windy day the air currents carry you irresistibly ahead, and the best that can be done is to side-slip to the right or to the left of the line of flight.

"About the land, if one imagines that he has just jumped from a twelve foot wall and crouches in a jumping position, he will be in the best position for landing. Too great tension of the leg muscles may result in ruptured tendons or broken foot bones. You are sure to collapse in a pile on the ground; it is better to relax with that in view, and thereby get a more even distribution of bruises. The jumper should face the way he is traveling, to accomplish this it is possible to make the 'chute revolve, earlier in the drop, by taking a few of the shroud lines and pulling diagonally, with the idea of working a "propeller" surface into one point of the 'chute circumference. The second 'chute may be pulled short 50 or 75 ft. before landing, chiefly to get rid of the extra weight. If pulled earlier, the two chutes will soon stand well apart, at 90 deg. or more, and will spill air between them, so that the jumper will fall nearly as fast as ever, and with practically no control.

"The bomber carried four recording barographs, as well as an indicating altimeters. The result of McCook Field laboratory measuremcots showed that the elevation was 24,206 ft.

"It was the intention of Lieut. Wade to take the plane, relieved of 250 lb. of weight, still higher, but one of the superchargers developed trouble and it was necessary to cut the flight short."

(c) International

The Vickers "Viking IV" amphibian (450 hp. Napier "Lion") which the Navy has purchased for comparative experiments

"Who's Who in American Aeronautics"

The biographical sketches of men who are prominent in American Aeronautics are printed periodically in AVIATION. The first series have been published in a more durable form, and revised issues will be published from time to time as take care of the frequent changes in station of Army and Navy officers, and such other changes as may occur. As errors and omissions are liable to occur in a compilation of this character, interested parties are requested to notify "Who's Who" Editor of the necessary corrections so the record may be kept up to date.

William P. A. Straith

STRAITH WILLIAM P. A., Commercial Aviation, born, Owen Sound Ont., Nov 3, 1891, son of James Bruce Straith and Agnes Bruce Straith, married, Rose Trent, July 26, 1915.

Educated Owen Sound Public Schools Collegiate Institute.

Professional Bell Telephone Co. Ont. Otis Passon Elevator Co., Winnipeg, Boyd Electric Co Ltd., Regina, Sask., Imperial Elevator & Motor Co., Western Elevator & Motor Co Ltd., Winnipeg, Man.

Aeronautical Activities Built and operated gliders, Sept 1909 built and operated airplanes 1911 operated and experimented with Curtiss Machine on single float carried out experiments on mosquitoes 1918-20 managing director, Canadian Aircraft Co. Ltd. 1923

Present Occupation Managing Director, Ontadian Aircraft Co Ltd., president, Western Elevator & Motor Co Ltd.

Address 183 Notre Dame Ave., East Winnipeg Manitoba, home, 211 Maryland St., Winnipeg

John William Metcalfe

METCALFE JOHN WILLIAM, Advertising, born, Chicago, Ill., August 30, 1894, son of William Hunt Metcalfe and Jennie Metcalfe

Educated Public School, La Salle, Ill., Franklin High School graduated Broadway High, Seattle, Wash., University of Washington

Professional: Engineer, General Appraisal Co., Seattle Wash.; Engineer, Simms Oil Co., Humble Oil & Ref. Co., Houston, Tex.

Aeronautical Activities Organized and helped promote Commercial Aeronautics Company in Houston in 1919

Flying Rating Civilians pilot license No. 209, B.M.A. pending pilot

War Service: Primary training, Rockwell Field Feb to May 1918, finished advanced bombing course at Ellington Field made instructor in formation flying; had charge B. M. training, held commission as 2nd Lt. U. S. A. S., R. M. A.

Member Aero Club of America

Present Occupation Advertising

Address 410 Pierce Ave., Houston, Tex.

Thomas W. Symons, Jr.

SYMONS THOMAS W. Jr., Investments, born, Washington, D. C., April 22, 1899, son of Col. Thomas Symons and Letitia R. Symons, married Frances Hatch, May 3, 1919

Educated: Public Schools, Yale, '11, George Washington Law School, '14

Professional President, Symons Investment Co.

Aeronautical Activities: Enlisted Nov 1917 commissioned 2nd Lt. R.M.A. May 1918 graduated Brooks Field Instructors School, served as instructor, first pilot to fly a hydroplane on inland waters of the Northwest; opened first aerodrome and hangar for instruction and commercial work in Inland Empire, sold first planes to be sold to post war trained pilots; first commercial pilot to cross Rockies.

Flying Rating R.M.A.

Member: Spokane Fliars' Club, first President

Present Occupation Manager, Symons Investment Co.

Address 92 Symons Block, Spokane, Wash., home, 1725 Pacific Ave., Spokane, Wash.

William L. O'Neal

O'NEAL WILLIAM L., Airplane POst, born, Lyle, Wash., Dec 1, 1899, son of William B. O'Neal and Orpha A. O'Neal

Educated Appleton Grammar and High School, Washington State College

Aeronautical Activities: U. S. Army 19 months, chief mechanic and pilot, Ore., Wash. and Idaho Airplane Co., Portland, Ore. 2 years.

Flying Rating B.M.A.

War Service Pvt., Nov. 1918- Feb 1919 Sgt. Feb 1 1919 Aug. 1919, flying cadet Sept. 1919- May 9 1920

Member American Legion

Present Occupation Chief mechanic and pilot Washington, Ida. Airplane Co.

Address 314 Spalding Bldg., Portland, Ore.; home, 2014 Harney St., Vancouver, Wash.

Burdette Shields Wright

WRIGHT BURDETTE SHIELDS, Captain, Air Service born, New Albany, Ind., Sept. 13, 1893 son of Allen Eli Wright and Julia Adelaide (Crane) Wright; married, Elizabeth McRae Campbell, Oct. 19, 1919

Educated: Grammar Schools and Louisville Manual Training High School of New Albany, Ind.; Purdue University of Lafayette, Ind., B. S. in E. E. 1916

Professional Asst. Electrical Engineer of the Iowa Railway and Light Co., Cedar Rapids, Iowa, June 1915 Aug. 1917

Aeronautical Activities: Student at Aerial Observation Schools in France, April 1918-June 1918, Aerial Observer at Front with 12th Aero Sqd. and operations officer of the 5th Army Corps, Observation Group June 1918-Jan 1919, on staff of headquarters of Air Service in France Jan 1919-March 1919, returned to U. S. March 1919, chief Tactial Units Section of Training and Operations Group Office, chief of Air Service April 1919-Feb. 1920, asst. to Asst. Chief of Air Service, Feb 1920-Dec. 1921, chief of the Airways Section of the Office, chief of Air Service, Dec. 1921 to date.

Flying Rating Airplane Observer, from June 1918, airplane pilot from Oct 1919

Honors French Croix de Guerre with Palm, Belgian Order de la Courronne with vank of Chevalier; citation by Gen. Gen of A. E. F. and Chief of the Zone of Advance Aviation.

Member Army and Navy Club, Aero Club of America, American Legion

Present Occupation Captain, Air Service; U. S. Army Chief, Chief of Air Service, Airways Section of Office.

Address: Munitions Bldg., Wash., D. C., home, "Windsor", Mt. Vernon Ave., Alexandria, Va.

Ernest Emery Harmon

HARMON, ERNEST EMERY 1st Lieut., Air Service, born, Dallas Texas, Feb 9, 1899, son of H. H. Harmon and Sybil (Emery) Harmon; married, Harriette F. Alexander Jan 1, 1919

Educated Public schools, Eastern High School, Wash., D. C., Bethany College, W. Va., B.S. 1918, George Washington Law, 1916-1917

Professional Surveyor, U. S. Govt. 1909 Principal High School, 1918-1916.

Aeronautical Activities Ground school, Dec. 1917, primary and pursuit training Gerstner Field, Jan. 1918 May 1918, instructor in combat and aerial gunnery and cross country flying, May-Aug., 1918, performance test pilot Wilbur Wright Test Field, Aug. 1918 Jan. 1919; chief test pilot and instructor Belling Field, Jan 1919 April 1920 pilot "Round the Rim", Martin bomber 1919; chief of Patent Section

Flying Rating: R.M.A. May 1919; airplane pilot.

War Service Sept. 11, 1917 to date.

Member: Aero Club of America.

Present Occupation 1st Lieut., Air Service.

Address Munitions Bldg., Wash. D. C., home, 613 Hobart Pl., N. W., Wash., D. C.

David Bassett Grosvenor

GROSVENOR, DAVID BASSETT, Investments, born, Chicago, Ill., Jan 1, 1881, son of Lemuel Gunnat Grosvenor and Naomi Josephine (Bassett) Grosvenor; married, Alice Louise McCormick, Nov 9, 1910

Educated Lincoln Grammar School, Lake View High School, Chicago Ill. Oberlin College, Oberlin, Ohio; AB Degree 1903

Professional: Bank of Dixon County, Ponca, Neb., 1903-1909 Fidelity Bank of O'Neill, Neb., 1909-1909 State Bank of Chicago 1909-1909, Investments—Roswell, Idaho, 1909-1917.

Aeronautical Activities: 1910 Aero Service Squadron A. E. F. 1918, Graduate, Course in Airplane Motors, Air Service Mechanics School, Kelly Field, 1920; Flying A. E. F. 1919, Mitchel Field, 1918; Kelly Field 1921.

Flying Rating Pilot, Aero Club America, Aviator's Certificate No. 5078

War Service Jan Nov 1918.

Present Occupation Investments

Address Hampton Roads, Langley Field, Va.; home Sterry Drive, Roswell, Idaho

David Gregg

GREGG, DAVID, Aeronautical Engineer, born, Cambridge, Mass., Sept. 29, 1899, son of Robert Etheridge Gregg and Susan (Crowell) Gregg, married, Mary Lillian Beck, March 10, 1921

Educated Noble & Greenough School, Boston, A.B. Harvard University, 1919, Harvard Engineering School.

Professional: Civilian flying during 1919-1920, Aeronautical Mechanical Engineer, U. S. Air Service, 1921 to date.

Aeronautical Activities Glider experiments, 1910-1911, started flying April 1919, won first Collegiate Airplane Design Competition, 1919, pilot U. S. Air Service, May 1917 Dec. 1919, represented Harvard at First Inter-Collegiate Flying Meet at Atlantic City, 1919, and at Reserve Officers Meet at Mitchel Field, 1920

Flying Rating R.M.A., F.A.I. British No. 9999, expert certificate, Aero Club of America No. 292, Royal Flying Corps certificate No. 11519

War Service First Lieut., Air Service, Ground School course at Ohio State University, later in Military Aeronautics at Queens College, Oxford, England, attached to R.F.C. as Test and Ferry pilot flying 23 different types of planes.

Member Society of Automotive Engineers, Harvard Aeronautical Society; Harvard Club of Dayton, American Legion.

Present Occupation: Aeronautical Mechanical Engineer, U. S. Air Service.

Address McCook Field, Dayton, Ohio; home, 925 Highland Street, West Newton, Mass.

George Marshall Denkinger

DENKINGER, GEORGE MARSHALL, Aeronautical Engineer, born, Brookline, Mass., April 19, 1899, son of Joseph Acton Denkinger and Alice Marshall Denkinger

Educated Private Schools, Mass. Inst. Tech. B.S.

Professional: Instructor in Army and Navy Aeronautical Schools, 1917 1919; instructor of Graduate Course, Aeronautical Engineering, M.I.T., 1919 1921, Consulting Aeronautical Engineer 1921 1922

Aeronautical Activities: In charge of Laboratory, M.I.T. as Research Aeronautical Engineer Air Service U. S. Army

Member: S.A.E.

Present Occupation Aeronautical Engineer

Address: Mass. Inst. of Tech., Cambridge, Mass.; home, 99 Addington Rd., Brookline, Mass.

J. Tinus Christensen

CHRISTENSEN, J. TINUS, Air Mail Pilot born, Denmark, Aug. 25, 1890, son of Peter Taft Christensen and Ane Margaret Christensen; married, Lena Davis, Sept. 16, 1919

Educated: Public schools of Nebraska; Dana College, Neb., Marquette University, Milwaukee

Aeronautical Activities Airplane Instructor to Army, flying exhibitions, photography and passenger carrying; pilot U. S. Air Mail Service, March 19, 1920 to date

Flying Rating Pursuit.

War Service R.M.A. U. S. Army, Sept. 30, 1917 to May 23, 1919

Present Occupation Air Mail Pilot.

Address Air Mail Field, Chicago, Ill.; home, 901 So. Second Ave., Maywood, Ill.

Arthur A. O'Brien

O'BRIEN, ARTHUR A., Banker, born, Chicago, Ill., Jan. 1, 1884, son of John D. and Ellen O'Brien.

Educated Public school of Chicago, L. L. B. Lake Forest University

Professional Lawyer 1905 until outbreak of World War, Capt., Major and Lt. Col. in U. S. Army during war, Asst. to Secretary of War 1919-1920

Aeronautical Activities: Member, Board of Governors, Aero Club of America; active in establishing legal status of Air Service

Present Occupation Investment Banker

Address 38 Broad St., New York; home, 19 W. 54th St.

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Five —The Second National Aero Congress is called to create an American aeronautic association which shall represent your thought and echo your voice here and abroad, in all fields of business and in the halls of your Municipal, State and National legislatures.

Six —You will have an active part in drafting the Constitution and By-Laws of this great representative organization. Your hand shall help write its policies, your efforts control its activities.

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For further details write

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SECOND NATIONAL AERO CONGRESS

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WASHINGTON, D. C.

De Muyter Wins Gordon Bennett Cup

In an official statement issued by the Aero Club of Switzerland on Sept. 6, Lieut Ernest de Muyter of Belgium was declared winner of the eleventh Gordon Bennett Balloon Race which started from Zurich, Switzerland, on Aug. 6. Lieutenant de Muyter landed at Oeratza, Roumania, about 780 miles from Zurich. H E Honeywell, American entrant, who landed at Tapio-Gyöngyös, Hungary, was ranked second with 660 miles, Maurice Bienaimé, French entrant, who landed at Mor, Hungary, was ranked third with 575 miles.

The delay in announcing the winner of this year's Gordon Bennett Balloon Race was due to the fact that Lieutenant de Muyter's balloon escaped after the aeronaut had alighted, so that he was for a time deprived of his log book and instruments with which to substantiate his claim Fortunately for the Belgian pilot, his balloon came down near Bucarest, where it was defleted by the Roumanian air service and shipped back to Zurich together with the log book and instruments. Had the balloon been lost without a trace, Lieutenant de Muyter would undoubtedly have been disqualified Alfred Leblanc lost in this manner second place in the 1909 Goedon Bennett Balloon Race, when his balloon was thrown against the cliffs of the Carpathian mountains and he barely had time to jump together with his aid, Delebecque, losing his balloon which was not heard of again

By a curious coincidence, Mr Honeywell again is ranked second in a Gordon Bennett Balloon race won by Lieutenant de Muyter, the previous instance happening in 1920

This year's race seems to have been much more exciting than last year's, for some of the competitors were fired upon by local militia mistaking the balloons for hostile aircraft, while others were kept prisoners for several hours and had to do much explaining before they were set free.

As a result of Lieutenant de Muyter's victory, the 1923 Goedon Bennett Balloon Race will take place in Belgium, under the auspices of the Aero Club of Belgium

The "On to Detroit Air Race"

The Detroit Aviation Society has received requests from at least ten different sections of the United States that a cross-country airplane race be held in connection with the National Airplane Races at Detroit, Oct. 12, 13 and 14. To satisfy these requests the Detroit Aviation Society announces that it will hold an "On to Detroit Race"

The Board of Commerce of Detroit believing that the growing popularity of aviation will eventually lead to considerable airplane freight transport, will award a trophy cup to the winning pilot Prizes of $500, $250 and $100 will also be awarded the three leaders.

The conditions of the race place a premium on the heaviest load carried with the smallest fuel economy the longest distance in the quickest time The rules of the contest are so arranged that every private airplane owner in the United States has an equal opportunity with air transport companies for winning the race. Each contestant must have his exact time of departure from his home field together with the number of passengers certified by responsible authorities before he begins the race. Another rule is that competing pilots must arrive at Selfridge Field, Mt. Clemens, Mich, where the National Races will be held, before 10 o'clock on the morning of Oct. 12. This is done to insure safety, as the large number of planes in the Air Mail Trophy Race that morning together with the hundred and fifty machines in the aircraft exhibition on the field will make the landing of visiting planes dangerous after that hour

Information Wanted

The Diggins Aviation Co. of Chicago requests information concerning George H Miller, formerly in the company's employ. Mr. Miller served for several years with the Royal Flying Corps as a Sergeant-Major and Flight Sergeant, and later with the United States Army, North-Eastern Division, when he was in charge of various airdromes and stationed at various fields in the East, holding the rank of lieutenant.

First Trials of the Curtiss Sailplane

The first trials of the Curtiss hydro-sailplane which was briefly described in our issue of Sept. 4 took place over Manhasset Bay, near Port Washington, L. I. on Sept. 6, with Glenn H. Curtiss at the controls

At the first attempt, while being towed by a motor boat at 20 m.p.h., the sailplane rose into the air just off Plumb Beach Point and remained in the air under the power of the motor boat for 14 sec. It was apparent immediately that the absence of a breeze alone prevented the glider from soaring by itself A second trial was made and the glider was in the air under power for 49 sec The sailplane reached a height of 20 ft., but Mr. Curtiss did not believe it advisable to cast off the towing rope During the flights under motive power

The Curtiss water sailplane on the slip at Port Washington, L. I., being made ready for its trials

the glider remained in perfect control, which led aviators present to predict that under favorable conditions great results might be expected of the craft.

After a third and fourth trial under tow, Mr. Curtiss arose once more from the sea and aided by a slight breeze which had been absent during the greater part of the day, he cast off the towing line and glided in 9 sec. back to the water

Further experiments are to take place under more favorable wind conditions Mr Curtiss said that the tests opened up a new line of aeronautical thought, namely, the possibility of using a sailplane as a trailer for a flying boat, forming what might be termed an air tram. The idea grew out of the discovery that the glider pulled very lightly on the line connecting it with the speed boat. W L. Gilmore, who was in the speed boat, took hold of the towline to ascertain the amount of stram He was astonished to find he could hold the sailplane with one hand At the time the glider was riding 20 ft. above water Another fact noted was that the sailplane occasionally gained on the speed boat and the line was slack.

Trade Notes

T L Blakemore of the Army Engineering Division, formerly located at McCook Field, Dayton, Ohio, is now permanently stationed at the Wingfoot Air Station of the Goodyear Tire & Rubber Co Mr. Blakemore will look after army interests in matters concerning the design and manufacture of lighter-than air craft.

The new type J non-rigid Goodyear airship on which the work of assembling was started this week at Wingfoot Lake Air Station will have two Union motors of 120 hp each mounted on Wingfoot type outriggers after a plan successfully carried out in tests on other ships last year. Radio equipment will be carried and a full supply of modern type parachutes, one for each member of the crew Other facts about the ship —173,000 cu. ft. capacity; 168 ft. long; 45 ft. diameter, speed 45/60 m.p.h., cruising radius 1,000-1,300 miles. A crew of seven persons will be carried, consisting of the pilot, soxswain, radio operator and observers As soon as completed the ship will be taken on its first test flights by Lieut. Charles Bauch of the Bureau of Aeronautics, Navy Department

More About Soaring Flight

Editor, AVIATION:

In AVIATION of Aug 28, 1922, Mr. Ruhin responds to some criticisms of a previous article on soaring flight. Mr Ruhin's answer is more convincingly reasoned than the original article My criticism was that the solution of soaring flight as expounded in the paper was not promising Mr Ruhin is on the right road to its solution. Soaring flight depends, as Mr Ruhin points out, on the actions of the earth on the bird, and the actions of the air on the bird, treated independently Soaring flight, however, probably does not depend upon some mysterious "pterygoidal" shape wing

There are some scientists who claim that, theoretically, soaring cannot be accomplished on a uniform horizontal wind. The same men sit at the seashore and tell us the tide puts a breaking action on the rotation of the earth without batting an eye at consistency. The soaring bird does slow down the wind, or better, portions of it. These men know that in solving the motions of the projectile the actions of the air and the actions of the earth must be treated independently, but when the projectile becomes an airplane considerations involving the earth's actions are taboo

By treating the actions of the earth and the actions of the air independently, it can readily be shown that an airplane equipped with a vertical sail area can soar in a uniform horizontal wind, but it is an inefficient soaring machine

Preliminary calculations on an airplane equipped with auxiliary aerofoils capable of taking positions which would give best results have been in existence for a year or more, and they indicate that wind driven air born transportation will have some importance to man

Soaring consists of a cyclic series of events. The basic cycle results in an orbital flight trajectory (not circular) Modifications of this fundamental cycle result in so called straight line soaring if the wind is strong enough, either with or against the wind (if the airspeed is greater than the wind) In this series of motions a mass acceleration force opposing change of motion of the airplane, and the inherent constant airspeed characteristics of airplanes are utilized

ARTHUR HALSTEN
Washington, D C, Aug 31, 1922

Airworthiness Certificate for Astor's Air Yacht

Underwriter's Laboratories' Airworthiness Certificate No 3, issued to Vincent Astor which is reproduced herewith, is the first air worthiness certificate to be released for a privately

Underwriters' Laboratories

AIRWORTHINESS CERTIFICATE

This Certifies that the Aircraft described below has been inspected and found Airworthy for daylight flying on LAND AND WATER ONLY

For the Flying Season of 1922

3

JULY 31,

N-ABCU

PRIVATE WATER AIRCRAFT

5

900

owned and operated seaplane Mr Astor's Loening air yacht is likewise registered under the nationality and identification mark, *N-ABCU*.

A New Curtiss Aviation School

During the last two years the Curtiss Aeroplane & Motor Corp has felt a growing demand for a flying school which would not only teach a man to solo, but would give him a chance to acquire enough time after his preliminary training to give him experience. It is a recognized fact that a young man of average ability and intelligence, in proper physical condition, can learn to fly sufficiently well to handle a machine in safety in a period of six to ten hours of flying instruction, and it is this instruction that commercial schools have been able to give. However, to send a pilot on a commercial job with this amount of training is suicidal, and no commercial company would consider employing him. Consequently, there has been little incentive for a young man to attend a flying school under these conditions (if he knew them) and the problem has been to supply this fifty hours of flying in which a student can acquire the experience necessary to make him a capable pilot without too great expense. To date no school has been able to do this, and few students are able to afford the three thousand dollars that such training would cost.

With this in mind, the Curtiss Aeroplane and Motor Corp. has arranged, through the Curtiss Exhibition Co., to operate its Aviation School at Garden City, L. I., offering the following inducements to students with the idea of solving the above problem:

A flying course in ten hours.

Eight weeks intensive training in airplane mechanics and its auxiliary subjects.

A complete Radio course

Presentation to graduates of a JN airplane equipped to take OX motor, less motor.

The cost of the complete course, including flying training and the airplane will be five hundred dollars. A great quantity of OX motors are available throughout the country at reasonable prices, so that at a minimum cost a student can get his preliminary training, together with an airplane, on which he can acquire the experience mentioned above, at the cost of his gas and oil, and become a pilot capable of demanding a good position In fact, after a little practice, he will be able to use his machine for passenger carrying, advertising, etc., with a good chance of fair profit together with his training.

A part of the work in the school will be the reconditioning of the machine and overhauling of motors by the students themselves under competent supervision This will familiarize them with their own machines and give them practical training that no other method could give.

Furthermore, classes will be given to a limited number in airplane and motor work alone, at a cost of one hundred dollars, and those attaining the required standards will be placed in the Curtiss organization. Plans are under way for a club where the students can get room and board at minimum rates.

The Curtiss company believe that this scheme will fill a long felt want and will go a long way toward popularizing and commercializing aviation

Aerial Photograph of Mt. Tacoma

A remarkable aerial close-up photograph of Mt. Tacoma was recently obtained from an airplane flying at 12,000 ft. by W. G. Stoesser of Tacoma, Wash. The flight of Stoetser was made possible as a result of the cooperation of Maj Gen. Muir, commander of Camp Lewis. The machine used was a Liberty motor De Havland plane, piloted by Lieut. Ned Schramm, United States Army flier, temporarily stationed at the camp.

The trip of Stoesser is a part of a complete motion picture story of Mount Tacoma, and the air trip was arranged by the publicity bureau of the Tacoma Chamber of Commerce, of which Mr Fraser is chairman. During the last month Mr. Stoesser has made frequent trips to Paradise Valley, and in co-operation with the publicity department of the Rainier National Park Company has made several pictures to be unveiled in a two-reel scenic featuring Mount Tacoma from the air and the side trips from Paradise Valley and National Park Inn at Longmire Springs.

The Berliner Helicopter in Flight

An interesting eyewitness' account of a recent flight of the Berliner helicopter is contributed by L. D Seymour in *Air Service News Letter* of Aug 29, last. Mr. Seymour writes as follows:

In company with officers of the Army, representatives of foreign governments, and civilian engineers, the writer was privileged a few weeks ago to personally witness a test of the only American machine yet to actually achieve a man-carrying flight.

By previous arrangement, the party which was to witness the flight gathered together about 4.30 a m., proceeding at once by automobile from Washington to College Park, Md. The hour, as described by Maj H M Hickam, Chief of the Information Division, Office Chief of Air Service, was a "wicked one." It was chosen, however, so that the chances of finding the air perfectly calm might be as great as possible.

Arriving at the Berliner hangars, we found that Emil Berliner had already preceded us and that the craft had been prepared for flight and was ready to be rolled from the hangar.

The machine looked like the conventional airplane, in that the fuselage and rotary engine might easily have been that of a Nieuport. The wings were replaced by two well braced horizontal duralumin spars extending on either side sufficiently to allow the two large airscrews, mounted in a horizontal plane on the outer ends of the spars, to describe circles, circumference of which were only a short distance from the pilot located in the usual position. Under the airscrews on each side of the machine were a set of vertical control surfaces actuated like ailerons by a stick in the cockpit.

On the tail we found that the control surfaces had not been changed and that they, too, were operated by the stick. In fact, the system of control was identical with that of any airplane. The only addition to the tail units was a small variable pitch propeller, revolving in a horizontal plane just forward of the vertical stabilizer. The pitch of this small screw was controlled simultaneously with the movement of the elevators.

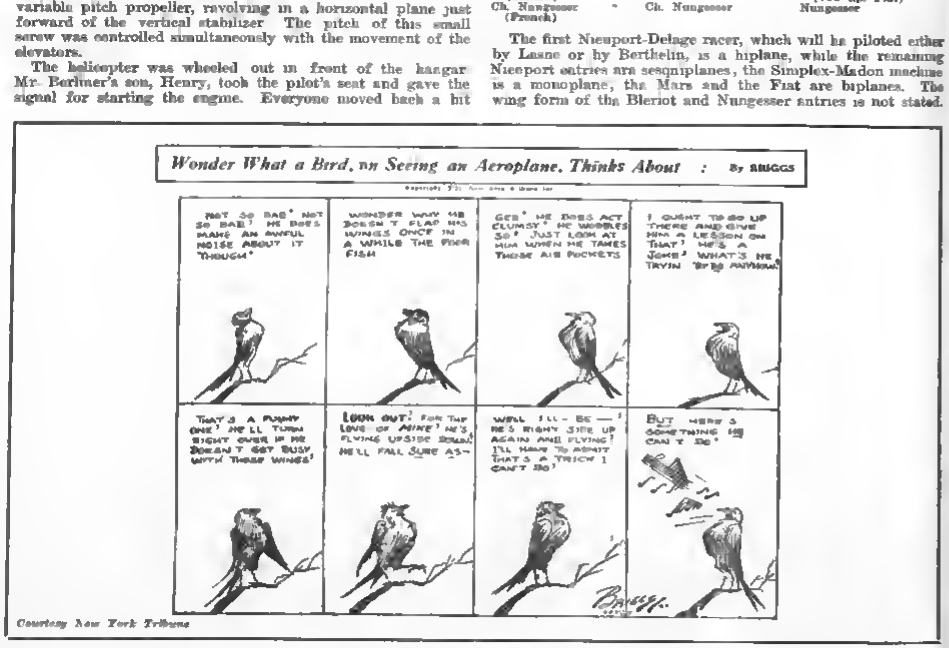
The helicopter was wheeled out in front of the hangar. Mr. Berliner's son, Henry, took the pilot's seat and gave the signal for starting the engine. Everyone moved back a bit as the motor was tested in the usual fashion. The two large horizontal propellers were revolving slowly while the small one on the rear of the fuselage was turning at a very high rate of speed. Suddenly, with only a slight increase in the speed of the engine, we noted the turning down of the elevators, accompanied by the tail rising to the usual horizontal flying position. *But the machine as a whole was stationary.* The sight was most uncanny to a man accustomed to seeing the tail of an airplane take the "flying position" only after a speed of fifty or sixty miles per hour has been attained preliminary to "taking off." We watched to see what would be the next move and were rewarded at once by seeing the wheels lift about 3 ft. from the ground and the machine first slowly and then somewhat faster start to move forward. We had witnessed the successful flight of a helicopter.

Entries for the Deutsch Cup Race

The Aero Club of France advises that its Aviation Commission (Contest Committee) has received the following entries for the Henri Deutsch de la Meurthe Cup race which is to take place Saturday, Sept. 30, 1922, at the Villesauvage aerodrome:

ENTRANT	PILOT	Aircraft
J. Casale (French)	J Casale	Bleriot, type Casale (400 hp. Lorraine)
Nieuport Co. (French)	Lasne or Berthelin	Nieuport-Delage (320 hp. Hispano)
Nieuport Co (French)	S. Lecointe or Lasne	Nieuport-Delage (320 hp. Hispano)
Nieuport Co (French)	S Lecointe or Lasne	Nieuport-Delage
Simplex Madon Co (French)	G Madon or Canivet	Simplex, type Madon (320 hp Hispano)
Gloucestershire Co. (British)	J James	Mars ("Bamel") (450 hp. Napier)
Fiat Co (Italian)	Not given	Fiat (700 hp. Fiat)
Ch. Nungesser (French)	Ch. Nungesser	Nungesser

The first Nieuport-Delage racer, which will be piloted either by Lasne or by Berthelin, is a biplane, while the remaining Nieuport entries are sesquiplanes, the Simplex-Madon machine is a monoplane, the Mars and the Fiat are biplanes. The wing form of the Bleriot and Nungesser entries is not stated.



Courtesy New York Tribune

ARMY AND NAVY AIR NEWS

Air Service

Crissy Field News—The Air Service personnel of Crissy Field, San Francisco, is again spread over the Northwest in connection with the forest patrol, Captain Lowell H. Smith, A.S., being in command of the detachment, 91st Squadron, Observation, stationed at the Municipal Flying Field, Eugene, Oregon. Other officers on duty there are: Captain Eugene G Remartz, Medical Corps, Flight Surgeon, Lieutenants Warren A Maxwell, William C. Goldsborough, John R. Morgan and Russell L. Maughan.

The conditions for flying in that fire-swept area are anything but desirable and at times most difficult due to the rugged country over which the flying is done and the lack of visibility caused by the smoke from the numerous fires. The Air Service has made itself very popular with the people of Eugene and vicinity and every effort to make it agreeable for those on duty there. There has been a great need for the air patrol from the early season but due to lack of funds, etc. it could not be given. The Oregonians, not satisfied with that condition, secured the patrol and have saved many dollars and their timber land. During the first day of the air patrol thirteen fires were located in one county and followed by like results which have reduced the fire-hazard to a minimum.

A typical illustration of the value of the airplane patrol in Oregon was given on Aug. 4 when Lieutenant Maughan carried Forester Oglesby over his district in Western Land County. Four new fires were discovered—one of 200 acres and another 400 acre fire, each one within six or seven miles of a Lookout Station. This patrol also covered about ten old fires which were still raging. Upon being asked which direction he wished to take, Mr. Oglesby handed Lieutenant Maughan a note saying: "Take me home. I have counted 31 fires, and have seen all I can stand for one day."

Friday, Aug. 8, 1922, was red letter day for the 91st Squadron (Observation) detachment stationed on temporary duty at Eugene, Ore., in connection with the Forest Patrol. Eight patrols were flown, 10 hr. 20 min. flying time, estimated distance covered 1600 miles, area covered 80,000 square miles. Eleven new fires were discovered, many old ones looked over and much valuable information obtained.

The squadron broadcasting station at the flying field has been meeting with remarkable success. It is the only broadcasting station of any size in Eugene.

* * *

Reserve Officers at Special Service Schools—Selections will be made of three captains, six first lieutenants and six second lieutenants to attend, for a period of three months, the Engineering School at McCook Field, Dayton, Ohio, and the Photographic Course and the Communications Course at the Technical School, Chanute Field, Rantoul, Ill., to report Jan. 2, 1923. For the Engineering school selection will be made of one first lieutenant and one second lieutenant each from the First and Second Corps Areas and one captain from the Third Corps Area. For the Photographic course there will be one first lieutenant from the Third Corps Area, one second lieutenant from the Fifth Corps Area, one first lieutenant and one second lieutenant from the Sixth Corps Area. For the Communications Course selection will be made of one first lieutenant and one second lieutenant from the Seventh Corps Area, one captain from the Eighth Corps Area and one first lieutenant and one second lieutenant from the Ninth Corps Area. Selections of Reserve officers to attend these courses should reach this office not later than Nov. 25, 1922.

Awards of Distinguished Service Cross—The Distinguished Service Cross was awarded by the commanding general, American Expeditionary Forces, for extraordinary heroism in action in France, to the following-named officers and enlisted men of the American Expeditionary Forces.

Carl Spatz, major, pilot, Air Service. For extraordinary heroism in action during the St. Mihiel offensive Sept. 26, 1918. Although he had received orders to go to the United States, he begged for and received permission to serve with a pursuit squadron at the front. Subordinating himself to men of lower rank, he was attached to a squadron as a pilot and saw many conditions and arduous service through the offensive. As a result of his efficient work he was promoted to the position of flight commander. Knowing that another attack was to take place in the vicinity of Verdun, he remained on duty in order to take part. On the day of the attack west of the Meuse, while with his patrol over enemy lines, a number of enemy aircraft were encountered. In the combat that followed he succeeded in bringing down two enemy planes. In his ardor and enthusiasm he became separated from his patrol while following another enemy far beyond the lines. His gasoline giving out, he was forced to land and managed to land within friendly territory. Through these acts he became an inspiration and example to all men with whom he was associated.

Hugh Brewster, first lieutenant, 49th Aero Squadron, Air Service. For extraordinary heroism in action in the region of Hagéville, France, Sept. 14, 1918. With First Lieut. *Hugh L. Fontaine*, he attacked nine enemy monoplanes (Fokkers) at an altitude of 4000 meters. He dived into the midst of the enemy formation without consideration for his personal safety, subjecting himself to great danger. By the suddenness and extreme vehemence of his attack, the machines were driven into confusion. Although greatly outnumbered, he and Lieut. *Fontaine* succeeded in shooting down two of the enemy.

Charles B. Dolve, first lieutenant, pilot, 93d Aero Squadron, Air Service. For extraordinary heroism in action near St. Benoit, France, Sept. 12, 1918. He, in conjunction with another American pilot, engaged and fought five enemy planes. Outnumbered and fighting against tremendous odds, he shot down three enemy planes and outfought the entire enemy formation.

J. Dickinson Este, first lieutenant, 13th Aero Squadron, Air Service. For extraordinary heroism in action near Chambley, France, Sept. 13, 1918. He was leading an offensive patrol of five machines when a formation of seven enemy single-seaters approached the patrol from above. Although outnumbered and in a very disadvantageous position, he did not hesitate to lead his patrol to the attack. Through the combat which followed he fought with the greatest bravery, in spite of the fact that he was himself attacked by two enemy planes, which fired at him at point-blank range from the rear and above. By his skill and courage he was able to keep his formation together, and they succeeded in shooting down three of the enemy planes, of which he himself destroyed one and drove down another out of control.

Hugh L. Fontaine, first lieutenant, 49th Aero Squadron, Air Service. For extraordinary heroism in action in the region of Hagéville, France, Sept. 14, 1918. With First Lieut. *Hugh Brewster*, he attacked nine enemy monoplanes (Fokkers) at an altitude of 4000 meters. He dived into the midst of the enemy formation without consideration for his personal safety, subjecting himself to great danger. By the suddenness and extreme vehemence of his attack, the machines were driven into confusion. Although greatly outnumbered, he and Lieut. *Brewster* succeeded in shooting down two of the enemy.

Bradley J. Gaylord, first lieutenant, pilot, 1st day bombardment group, Air Service. For extraordinary heroism in action between Chambley and Xammes, France, Sept 13, 1918 While leading an important mission with two other planes, he was attacked by fifteen enemy planes. Nevertheless, he and his observer carried out the mission, bombed the objective in a running fight, and shot down at least one enemy plane.

Clarence C. Kahle, first lieutenant, pilot, 99th Aero Squadron, Air Service. For extraordinary heroism in action near Lachanssée, France, Sept 13, 1918 He, with First Lieut *Raymond C Hill*, observer, was directed to take photographs of the old Hindenburg line They were accompanied by two protesting planes. After they had taken some photographs the protecting planes were driven off by hostile aircraft, but he and his observer continued their mission alone, until in the vicinity of Lachanssée they were attacked by an enemy formation of nine planes. Lieut. *Kahle* put up a gallant fight in which his observer was shot through the heart and killed. Although pitted against overwhelming odds, Lieut *Kahle*, by his pluck, determination, skill and courage, brought the photographs and the plane back to his airdrome, the enemy keeping up a constant attack upon him back to our lines, ridding the plane with machine-gun bullets

Carl C. Payne, first lieutenant, 20th Aero Squadron, Air Service. For extraordinary heroism in action near Longuyon, France, Sept. 16, 1918 Starting on a very important daylight bombing mission with five other planes, as observer he went on alone when the other five planes were forced to turn back. On crossing the German line, he was attacked by three enemy planes. Using his guns to keep the enemy at bay, he went on, reached his objective, and dropped his bombs on the railroad junction, cutting the line. On the way back four more planes joined in the attack, but, keeping them at bay with his guns, he reached the allied lines.

Cecil G. Sellers, first lieutenant, 20th Aero Squadron, Air Service. For extraordinary heroism in action near Longuyon, France, Sept. 16, 1918. Starting on a very important bombing mission with five other planes, as pilot he went on alone when the other five machines were forced to turn back. On crossing the enemy lines he was attacked by three enemy planes, but continued toward his objectives, while his observer kept them at bay. In the face of this hostile opposition the objective was reached and the bombs dropped On the way back four more planes joined in the attack, but fighting them off they reached our lines with valuable information after a fight lasting 38 min.

Arthur R. Brooks, second lieutenant, Air Service For extraordinary heroism in action over Mars-la Tours, France, Sept. 14, 1918. When his patrol was attacked by twelve enemy Fokkers over Mars-la-Tours, 8 miles within the enemy lines, he alone fought bravely and relentlessly with eight of them, pursuing the fight from 5000 m to within a few metere of the ground, and though his right rudder control was out and his plane riddled with bullets, he destroyed two Fokkers, one falling out of control and the other bursting into flames.

Howard G. Rath, second lieutenant, observer, 96th Aero Squadron For extraordinary heroism in action between Chambley and Xammes, France, Sept 13, 1918 While acting as leading observer of a fight of three planes he was attacked by fifteen enemy planes. In spite of the fact that his formation was surrounded by an enemy five times as large, he carried out successfully his mission and bombed his objective. In the return running fight he and his pilot continued the unequal fight and succeeded in returning to their airdrome with valuable information.

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Abandonment of Air Service Stations—As a result of the reduction in strength of the Regular Army, instructions have been given or are being prepared for withdrawing troops from the following Air Service Stations: Carlstrom Field, Fla., Dorr Field, Fla.; Ellington Field, Tex., Rockwell Field, Calif; March Field, Calif., and Lee Hall, Va.

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Nominations—The following nomination was sent to the Senate Aug 3

To be Lieutenant, A.S., by transfer, Regular Army, First Lieut. John M Ferral, Cavalry

An Inspection Trip Via Airplane—Traveling by airplane approximately 3000 miles, Gen. William Mitchell, Assistant Chief of Air Service, has returned to the capital from an inspection of Air Service activities in the Middle West, visiting McCook Field, Dayton, Ohio; Selfridge Field, Mt Clemens, Mich., Culver, Ind., Milwaukee, Wis.; Chicago, Ill.; and Cleveland, Ohio

On his trip between Milwaukee and Culver, General Mitchell encountered wretched weather conditions, being forced to struggle through severe rain storms and heavy clouds. From Chicago to Selfridge he ran into the worst thunder storm he had ever seen, and was forced to fly for about fifty miles around the edge of the storm in order to get around it. He then turned around and came back toward Lake Michigan at an altitude of 10,000 ft He accomplished the trip from Selfridge Field to Cleveland in 1 hr 40 min., flying straight across Lake Erie, a distance of thirty-five miles, at 10,000 ft. altitude

While at Culver General Mitchell delivered an illustrated lecture to the students of the Culver Military Academy, and at Cleveland and Chicago delivered talks to the respective Chambers of Commerce. He made the trip from Dayton to Bolling Field, D C., in 4 hr 25 min.

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Colonel Beck Exonerated—The Secretary of War has approved the findings of the Board of Officers convened to investigate the cause of death of Lt. Col Paul W. Beck, A. S

The findings of the board are as follows:

"(a) That Lt Col Paul W Beck, A S, died at 411 West 19th St Oklahoma City, Oklahoma, between the hours of 2 and 3 o'clock a m, April 4, 1922, from a gun-shot wound in the head

"(b) That Lt Col Paul W Beck, A S., was not at the time of his death on leave status, but in Oklahoma City on an authorized routine cross country flight undertaken in accordance with the training requirements of the Air Service, and duly authorized by himself in his capacity as commanding officer, Post Field That he met his death in the home of one Jean P Day, at the time and date specified, as the result of a gun-shot wound in the head, inflicted by a revolver held in the hand of the said Jean P. Day

"(c) That the death of Lt Col Paul W. Beck, A S, occurred in the line of duty

"(d) That the death of Lt. Col Paul W Beck, A. S., was not due to his own willful misconduct."

A copy of the proceedings of the board will be furnished the Attorney General of the State of Oklahoma.

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New Altitude Record for Bombers—Ascending to an altitude of 23,350 ft in a Martin Bomber, Lieut. Leigh Wade, test pilot at McCook Field, Dayton, Ohio, broke his own altitude record made several months ago for an airplane carrying three passengers. Lieutenant Wade performed his latest feat on Aug 1, and he was accompanied by Capt A W Stevens, aerial photographer, and Sergeant Roy Laugham, observer The bomber was equipped with a Moss supercharger.

Contrary to most altitude trips, this flight was without any unusual incident The temperature was slightly below zero, while a wind, estimated at 100 m.p.h. was recorded. The flight took 2 hr. 15 min One hour 52 min. elapsed before the ship reached the ceiling, while only 23 min. were required for the return trip.

Lieutenant Wade believed that with several minor adjustments he can climb the Bomber to a higher altitude.

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Messenger Planes at Selfridge Field—The First Group (Pursuit) at Selfridge Field, Mt Clemens, Mich., has recently received a Messenger and is looking for a shipment of five additional planes for assignment to the squadrons. The one now at the field has a gas capacity of 5 hr and was flown from Fairfield, Ohio, to Selfridge Field in 2½ hr. against a 12 m.p.h. head wind. This time is only 30 min. greater than the average DH4 time for this trip. All pilots are trying their hand with the Messenger and are delighted with its remarkable performance

Aviators Reunion at Detroit—The Advance Committee an Organization of the National Aeronautic Association of U S.A. is now in communication with members of Air Service Squadrons who served in this country and overseas during the war, also with war time naval units, with a view to encouraging reunions of the various units at Detroit on Oct. 12, 13, and 14 next, at the time of the Pulitzer and other national airplane races and concurrent with the big National Convention of the National Aeronautic Association of the U S A. In the 94th Aero Squadron alone, seventeen members have pledged to be present for the reunion of that unit, and the enthusiastic response from all over the country is an indication of a big attendance of veteran airmen.

Further information can be obtained by writing the Advance Committee on Organization at 307 Mills Building, Washington, D C., or 4612 Woodward Avenue, Detroit, Mich.

Naval Aviation

Air Squadron, Atlantic Fleet—Capt. Walter R Gherardi, Commander, Air Squadrons, Atlantic Fleet, with Lt. Comdr. Wadleigh Capehart, Aide, and several other Naval Aviation Officers from his Flagship Wright, arrived at the Anacostia Naval Air Station on Sept. 1 from Hampton Roads in two F5L's.

The trip up was uneventful, Commander Capehart stated, in spite of considerable fog, and the run was made in three hours. Captain Gherardi, who recently succeeded Captain Johnson as commander of the Atlantic Fleet Air Force, will confer with Admiral Moffett on winter aviation plans, the number of replacement planes needed and other aviation activities of the Atlantic Fleet before he returns to his station

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Mare Naval Flight Surgeons—The first eleven of a class of thirteen Naval Medical Officers have been ordered to the Army Flight Surgeons' School at Mineola, L. I., for preliminary training This class is the second to go through the Army school, the first class of five now taking flight training at Pensacola, Fla

The course at Mineola is of three months duration in which the men study the effect of flying on pilots, and the technical end of aviation medicine Later they will have six months' flying themselves at Pensacola.

The purpose of this training is to enable the surgeons to make a close and analytical study of men under flying conditions, and flight requirements with a view of examining applicants for aviation work and to keep the personnel in good physical and mental shape while on flight duty After their nine months' instruction is completed they will be assigned to flying detachments of the Navy or Air Stations. One of the duties of a flight surgeon is to keep the aviators from participating in flights when they are not physically and mentally capable of efficient performance, and thus prevent accidents and a loss of personnel

The names of the men assigned to the class to date follow: Lieut. John C Adams, Lieut. Charles C Ammerman, Lieut. Frank R Bealer, Lieut. James D Benjamin, Lieut Earl C Carr, Lieut Frank H Clements, Lieut Robert P Henderson, Lieut George L. McClintock, Lieut Robert B Miller, Lieut. John R Poppen, Lieut Alma C Smith, Lieut Wilhem H. Wynn

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Navy Trains "Aircraft Radiomen"—During the past year about sixty radio operators for aviation work have been trained by the Naval Air Service at Pensacola, and assigned to active flying duty where they are doing excellent work as aerial radio operators. They are designated as Aircraft Radiomen.

Promising students in radio are selected from the classes at the Naval Great Lakes Training Station and transferred to the Aircraft Radio School at the Naval Air Station, Pensacola, Fla. Upon arrival these students are put into classes varying from twelve to forty for instruction in ground school work where they learn the same elemental principles of radio and aviation taught to the student aviators under the same instructors.

With the ground work of their aerial and radio education completed, they are sent to the radio laboratory for special communication instruction and practical work in overhauling and testing of different types of radio apparatus. Under the direction of competent instructors they learn how to "shoot trouble," dissemble, repair and assemble receivers and transmitters, rewind armatures and transformers, and test the finished radio apparatus. Later, the students are assigned to radio compass stations for instruction in the use and maintenance of direction finders as well as in the method of taking bearings. Finally, a week is spent in the radio station for experience and practice in procedure and standing watch During the last three weeks of the twelve week instruction course, they are assigned to one of the operating air squadrons for practical instruction and experience in the installation, upkeep and operation of aircraft radio sets in all available types of seaplanes.

Following twelve weeks of rigid training and instruction, the Radioman is ready for transfer to an operating air station or squadron of airplanes, where he finds that he fits into the scheme of things very handily, although he is a newcomer in naval aviation.

The policy of the school prevents the turning out of a great number of radiomen, it being determined to graduate only as many qualified radiomen suited for aircraft work as possible For this reason about 37 per cent of the men reporting for instruction at the station were returned to the general naval service as not qualified for Aircraft Radio work before the course is completed, but 63 per cent have qualified and gone to stations.

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Navy Orders—Lt Comdr. George D. Murray, det. Air Squadrons Battle Fleet, to duty Naval Aircraft Factory Navy Yard, Philadelphia, Pa.

Lt. Comdr Joseph E MacDonald (Supply Corps) det. Aircraft Squadrons Battle Fleet; to supply officer Naval Aircraft Factory Navy Yard, Phila., Pa.

Lieut Howell C Johnson (Medical Corps) det. U.S.S. Chaumont, to Torpedo and Bombing Plane Squadron One

Ens. George F. Burdick and H J Walker designated Student Naval Aviators from 6-29-22. Ens. Jas. D Haselden and C C. Champion, Jr., designated Student Naval Aviators 6-30-22. Lieut. P O Northington, M.C. designated Student Nav Aviator 6-26-22 Lieut. J F Neuberger, M. C., designated Student Nav Aviator 6-27-22 Lt. Cdr. Robert M. Griffin appointed Student Nav. Aviation Observer 7-11-22.

Lieut. William W. Davies, M.C., det. Mar Rec. Sta. Indianapolis, Ind., to course instruc Med. Research Laboratory & School for Flight Surgeons, Mitchel Field, Mineola, L. I. N Y.

Lieut. Gleaves B Kenny, Med., C., det. Nav. Train. Sta. Hamp. Rds. to Nav Air Sta Anacostia, D C

Coming Aeronautical Events

AMERICAN

Oct. 7 — *Detroit Aerial Water Derby, Detroit. (Curtiss Marine Flying Trophy Competition.)*

Oct. 12-14 — *Detroit Aerial Derby, Detroit. (Pulitzer Trophy Race.)*

FOREIGN

September — *Grand Prize of Italy. (International Airplane Competition.) Milan, Italy*

Sept. 30 — *Coupe Henri Deutsch de la Meurthe. (Airplane speed race.) France*

Oct. 8 — *International Parachute Competition. Rome, Italy*

Oct. 16-21 — *British Sailplane Competition. For Daily Mail Prize.*

Foreign News

England—London newspapers recently have printed rumors to the effect that an increase of the Royal Air Force by ten squadrons is about to be sanctioned, adding that, while the Air Ministry has not yet received definite orders, about 500 officers who were granted commissions for three years in 1919 have been invited to continue their service.

At present the Royal Air Force has only 32 squadrons of war airplanes, and of these only 12 are on duty in the British Isles.

It is stated that an important effect of the increase will be to bring orders to the airplane industry, which has been crippled during the past year or two

Protests are being registered by London newspapers over the fact that, through lack of support on the part of the British Government, airplane and engine manufacturers are closing down their works one after another and dismissing their engineers. The London Daily Mail calls attention to the fact that following a statement recently published to the effect that the Rolls-Royce Co were considering the closing of their works at Derby, it now appears that a similar course may have to be taken by the Bristol Airplane Company in the department of their works in which the Jupiter engine has been developed.

This 450 h.p 9-cylinder radial air cooled engine, evolved after years of research, has 25% fewer parts than a water-cooled engine, occupies a longitudinal space of only two feet in the airplane and is so light that it can be lifted by four men. Submitted to the most rigorous tests of the British Air Ministry, it emerged from them triumphantly Government orders, however, for this engine were not forthcoming in the number required to keep the workshops sufficiently employed, and the probability is that France will eventually be the sole producer of this engine Several months ago the engine was exhibited in France, and the Gnome Company, one of the most famous of aero engine builders, succeeded in completing negotiations with a view to building the Jupiter in France The engine successfully passed through the French official tests and is now to be built in that country and fitted to French military and commercial airplanes.

• • •

Uruguay—The superintendent of shops of the Uruguayan Military School of Aviation recently returned to that country after a six months' trip to Europe, where he bought a stock of aviation supplies and parts amounting to 433,400 francs, which he estimated would have cost 3,000,000 francs if bought new

Some idea of the reductions in price may be obtained from the fact that he paid 2,900 francs each for 110-130 h.p Le-Rhone motors and for 130 h.p Clerget motors, and 4,000 francs each for 220 h.p. Hispano-Suiza motors He also purchased six new "Nieuport" airplanes complete, as well as large quantities of spare parts for other machines now being used by the Uruguayan Military School

The superintendent states that while in France he encountered commissioners from Bolivia, Czechoslovakia, Greece, Mexico and Japan, who were there for the purpose of studying aeronautics and securing material for aviation in their respective countries.— *Commerce Reports*

• • •

France—The Toulouse-Casablanca airline, which has been in operation since June, 1920, made up to the end of 1921, 522 trips, aggregating 602,332 miles, on which 1,082 passengers, 179,768 lb of parcels, and 28,855 lb. of mail were carried. The normal flying time from Toulouse to Casablanca, a distance of 1155 miles, is 13 hr The scheduled transit time is 32 hr., allowing for an overnight stop at Alicante, although the flight is frequently made in one day

Two new lines will soon be operating in the Bordeaux District, one from Bordeaux to Lisbon and the other from Bordeaux to Nantes. The latter will connect Bordeaux by air with Geneva, through the Geneva-Lyon Nantes line already in operation The Bordeaux-Toulouse-Marseille service is to be extended to Gnoea and to Tunis.

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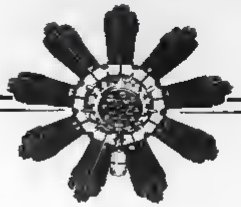

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British Air Ministry Type Test, September, 1921.

The Jupiter engine was the first air-cooled engine to pass this test, which comprised 50 hours' endurance test at 90 per cent full power, one hour high speed, one hour high power, runs for power curve, etc. At the conclusion of these tests one hour was run at full throttle at 1,775 r.p.m., averaging 442 B.H.P., and one hour at 1,840 r.p.m., averaging 450 B.H.P.

French Air Ministry Type Test, June, 1922.

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